



# DELL EMC NETWORKING N1500 SERIES SWITCHES

## Extending enterprise features to small and mid-sized businesses

The N1500 switch series offers a power-efficient Gigabit Ethernet (GbE) network-access switching solution with integrated 10GbE uplinks. With high-performance capabilities and wire-speed performance, utilizing a non-blocking architecture to easily handle unexpected traffic loads, the switches offer simple management and scalability via an 40Gbps (full-duplex) high availability stacking architecture that allows management of up to four switches from a single IP address. An integrated 80PLUS-certified power supply and features such as Energy-Efficient Ethernet and short cable detection provide energy efficiency to help decrease power and cooling costs.

### Modernize campus network architectures

Modernize campus network architectures with a power-efficient and resilient 1/10GbE switching solution with Power over Ethernet Plus (PoE+). Select N1500 models offer 24 or 48 ports of PoE+ to deliver clean power to network devices such as wireless access points (APs), Voice-over-IP (VoIP) handsets, video conferencing systems and security cameras.

### Leverage familiar tools and practices

All N-Series switches include Dell EMC Networking OS 6, designed for easier deployment, greater interoperability and a lower learning curve for network administrators. One common command line interface (CLI) and graphic user interface (GUI) using a well-known command language gets skilled network administrators productive quickly. With USB auto-configuration, network administrators can rapidly deploy mirrored configurations to numerous devices by simply inserting a USB key.

### Deploy with confidence at any scale

N1500 series switches help create performance assurance with a data rate up to 176Gbps (full duplex) and a forwarding rate up to 164Mpps. Scale easily by stacking with 10GbE ports. Switch stacks of up to 200 1GbE ports can be managed from a single screen using the highly available stacking architecture for high-density aggregation with seamless redundant availability. N-Series switches help provide certainty with a lifetime warranty that covers software upgrades, hardware repair or replacement, and optics and cables purchased with the switch. Details at [Dell.com/LifetimeWarranty](http://Dell.com/LifetimeWarranty).\*

### Hardware, performance and efficiency

- Up to 48 line-rate GbE RJ-45 ports and four integrated 10GbE SFP+ ports.
- Up to 48 ports of PoE+ with an optional external power supply.
- Up to 200 1GbE ports in a 4-unit stack for high-density, high-availability in IDFs, MDFs and wiring closets.
- Non-stop forwarding and fast failover in stack configurations.
- Energy-Efficient Ethernet and lower power PHYs reduce power to inactive ports and idle links, providing energy savings from the power cord to the port.
- Fresh Air compliance for operation in environments up to 113°F (45°C) helps reduce cooling costs in temperature-constrained deployments.

### Deploying, configuring and managing

- USB auto-configuration rapidly deploys the switch without setting up complex TFTP configurations or sending technical staff to remote offices.
- Management via an intuitive and familiar CLI, embedded web server (GUI), SNMP-based management console application (including Dell OpenManage Network Manager), Telnet or serial connection.
- Private VLAN extensions and Private VLAN Edge support.
- AAA authorization, TACACS+ accounting and RADIUS support for comprehensive secure access support.
- Authentication tiering allows network administrators to tier port authentication methods such as 802.1x, MAC Authentication
- Bypass and Captive Portal in priority order so that a single port can provide flexible access and security.
- Layer 3 Lite IPv4 and IPv6 functionality including static routing and Routing Information Protocol support.
- Remote Switch Port Analyzer (RSPAN) monitors ports across a Layer 2 domain without costly dedicated network taps.
- OpenFlow 1.3 provides the ability to separate the control plane from the forwarding plane for more sophisticated traffic management.

Product	Description
<b>N1500 series</b>	N1524P: 24x RJ45 10/100/1000Mb PoE+ (up to 30.8w) auto-sensing ports, 4x SFP+ ports, 1 integrated 600W PSU (requires C15 plug)  N1548P: 48x RJ45 10/100/1000Mb PoE+ (up to 30.8w) auto-sensing ports, 4x SFP+ ports, 1 integrated 600W PSU (requires C15 plug)
<b>Power cords</b>	C13 to NEMA 5-15, 3M C13 to C14, 2M C15 to NEMA 5-15, 2M (C15 for POE N-Series only)
<b>Power supplies (optional)</b>	RPS720 external power supply for N1500 non-POE (720 watts): N1524 and N1548 (sold separately) MPS1000 external power supply for N1500 PoE+ switches (1000 watts): N1524P and N1548P (sold separately)
<b>Optics (optional)</b>	Transceiver, SFP, 1000BASE-T Transceiver, SFP, 1000BASE-SX, 850nm wavelength, up to 550m reach Transceiver, SFP, 1000BASE-LX, 1310nm wavelength, up to 10km reach Transceiver, SFP, 1000BASE-ZX, 1550nm wavelength, up to 80km reach Transceiver, SFP+, 10GbE, SR, 850nm wavelength, up to 300m reach Transceiver, SFP+, 10GbE, LR, 1310nm wavelength, up to 10km reach Transceiver, SFP+, 10GbE, ER, 1550nm wavelength, up to 40km reach
<b>Cables (optional)</b>	Dell Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct

## Technical specifications

### Physical

4 integrated front 10GbE SFP+ dedicated ports,  
2 10GbE can be used as stacking ports  
USB (Type A) port for configuration via USB flash drive  
Auto-negotiation for speed and flow control  
Auto MDI/MDIX, port mirroring  
Flow-based port mirroring  
Broadcast storm control  
Energy-Efficient Ethernet per port settings  
Redundant variable speed fans  
Air flow: I/O to power supply  
Integrated power supply: 40W AC (N1524),  
100W AC (N1548), 600W AC (N1524P,  
N1548P)  
RJ45 console port with RS232 signaling (RJ-45 to  
female DB-9 connector cable included)  
Dual firmware images on-board  
Switching engine model: Store and forward

### Chassis

Size (1RU, H x W x D):  
N1524 and N1548: 1.7 in x 17.3 in x 10.1 in  
(43.2 mm x 440.0 mm x 257.0 mm)  
N1524P and N1548P: 1.7 in x 17.3 in x 15.2 in  
(43.2 mm x 440.0 mm x 387.0 mm)  
Approximate weight: 6.6lbs/3kg (N1524),  
12.8lbs/5.8kg (N1524P), 8.8lbs/4kg (N1548),  
15.4lbs/7kg (N1548P)  
Rack mounting kit with 2 mounting brackets, bolts  
and cage nuts

### Environmental

Power supply efficiency: 80% or better in all  
operating modes  
Max. thermal output (BTU/hr): 103.1 (N1524),  
297.2 (N1524P), 152.2 (N1548),  
582.4.3 (N1548P)

Power consumption max (watts): 30.2 (N1524),  
871 (N1524P), 44.6 (N1548), 1704 (N1548P)  
Operating temperature: 32° to 113°F (0° to 45°C)  
Operating humidity: 95%  
Storage temperature: -40° to 149°F  
(-40° to 65°C)  
Storage relative humidity: 85%

### Performance

MAC addresses: 16K  
Static routes: 256 (IPv4)/128 (IPv6)  
Dynamic routes: 256 (IPv4)  
Switch fabric capacity: 128Gbps (N1524 and  
N1524P) (full duplex); 176Gbps (N1548 and  
N1548P)  
Forwarding rate: 128Mpps (N1524 and N1524P);  
164Mpps (N1548 and N1548P)  
Link aggregation: 64 LAG groups, 144 dynamic  
ports per stack, 8 member ports per LAG  
Priority queues per port: 8  
Line-rate Layer 2 switching: All (non-blocking)  
Line-rate Layer 3 routing: All (non-blocking)  
Flash memory: 256MB  
Packet buffer memory: 1.5MB  
CPU memory: 1GB  
RIP routing interfaces: 128  
VLAN routing interfaces: 128  
VLANs supported: 512  
Protocol-based VLANs: Supported  
ARP entries: 2,048 (IPv4)/512 (IPv6)  
NDP entries: 400  
Access control lists (ACL): Supported  
MAC and IP-based ACLs: Supported  
Time-controlled ACLs: Supported  
Max number of ACLs: 100  
Max ACL rules system-wide: 2,048  
Max rules per ACL: 1,023

Max ACL rules per interface (IPv4): 1,023  
(ingress), 1,023 (egress)  
Max ACL rules per interface (IPv6): 512 (ingress),  
509 (egress)  
Max VLAN interfaces with ACLs applied: 24

### IEEE compliance

802.1AB LLDP  
Dell Voice VLAN  
Dell ISDP (inter-operates with devices running CDP)  
802.1D Bridging, Spanning Tree  
802.1p Ethernet Priority (User Provisioning  
and Mapping)  
Dell Adjustable WRR and Strict Queue Scheduling  
802.1Q VLAN Tagging, Double VLAN Tagging,  
GVRP  
802.1S Multiple Spanning Tree (MSTP)  
802.1v Protocol-based VLANs  
802.1W Rapid Spanning Tree (RSTP)  
Dell RSTP-Per VLAN (compatible with Cisco's  
RPVST+)  
Dell Spanning tree optional features: STP root  
guard, BPDU guard, BPDU filtering  
802.1X Network Access Control, Auto VLAN  
802.2 Logical Link Control  
802.3 10BASE-T  
802.3ab Gigabit Ethernet (1000BASE-T)  
802.3ac Frame Extensions for VLAN Tagging  
802.3ad Link Aggregation with LACP  
802.3ae 10 Gigabit Ethernet (10GBASE-X)  
802.3at PoE+ (N1524P and N1548P)  
802.3AX LAG Load Balancing  
802.3az Energy Efficient Ethernet (EEE)  
802.3u Fast Ethernet (100BASE-TX) on  
Management Ports  
802.3x Flow Control  
802.3z Gigabit Ethernet (1000BASE-X)  
ANSI LLDP-MED (TIA-1057)  
MTU 9,216 bytes

## RFC compliance and additional features

### General Internet protocols

General Internet protocols are supported. For a detailed list, please contact your Dell EMC representative.

### General IPv4 protocols

General IPv4 protocols are supported. For a detailed list, please contact your Dell EMC representative.

### General IPv6 protocols

General IPv6 protocols are supported. For a detailed list, please contact your Dell EMC representative.

### Layer 3 functionality

1058 RIPv1 2082 RIP-2 MD5 Auth  
1724 RIPv2 MIB Extension 2453 RIPv2

### Multicast

2932 IPv4 MIB 4541 IGMP v1/v2/v3  
Snoothing and Querier

IEEE 802.1ag draft 8.1—Connectivity Fault Management

### Quality of service

2474 DiffServ Field Dell Flow Based QoS  
2475 DiffServ Architecture Dell Services Mode  
2597 Assured Fwd PHB (IPv4/IPv6)  
Dell L4 Trusted Mode Dell Port Based QoS  
(TCP/UDP) Services Mode  
Dell UDLD

### Network management and security

1155 SMIv1 2295 Transport Content  
1157 SNMPv1 Negotiation  
1212 Concise MIB 2296 Remote Variant  
Definitions Selection  
1213 MIB-II 2346 AES Ciphersuites  
1215 SNMP Traps for TLS  
1286 Bridge MIB 2576 Coexistence  
1442 SMIv2 Between  
1451 Manager-to- SMIv2  
Manager MIB 2578 SMIv2  
1492 TACACS+ 2579 Textual  
Conventions  
1493 Managed Objects for Bridges MIB for SMIv2  
1573 Evolution of 2580 Conformance  
Interfaces Statements  
for SMIv2  
1612 DNS Resolver MIB 2613 RMON MIB  
Extensions  
1643 Ethernet-like MIB 2618 RADIUS  
1757 RMON MIB Authentication  
MIB  
1867 HTML/2.0 Forms with File Upload Extensions 2620 RADIUS Accounting  
MIB  
1901 Community-based 2665 Ethernet-like  
SNMPv2 Interfaces MIB  
1907 SNMPv2 MIB 2674 Extended Bridge  
MIB  
1908 Coexistence 2737 ENTITY MIB  
Between ENTITIES  
SNMPv1/v2 2818 HTTP over TLS  
2011 IP MIB 2819 RMON MIB  
(groups 1, 2, 3, 9)  
2012 TCP MIB 2863 Interfaces MIB  
2013 UDP MIB 2865 RADIUS  
2068 HTTP/1.1 2866 RADIUS  
2096 IP Forwarding Table Accounting  
MIB 2868 RADIUS Attributes  
MIB for Tunnel Prot.  
2233 Interfaces Group using SMIv2 2869 RADIUS  
2246 TLS v1 Extensions  
2271 SNMP Framework MIB 3410 Internet Standard  
Mgmt. Framework

3411 SNMP Management Framework  
4716 SECSH Public Key File Format  
6101 SSL  
3412 Message Processing and Dispatching  
Dell Enterprise MIB supporting routing features draft-ietf-hubmib-etherif-mib-v3-00.txt (Obsoletes RFC 2665)  
3413 SNMP Applications  
Dell LAG MIB  
3414 User-based security model Support for 802.3ad  
3415 View-based control model Functionality  
3416 SNMPv2 sflow version 1.3 draft 5  
3418 SNMP MIB Dell  
3577 RMON MIB 802.1x Monitor Mode  
3580 802.1X with RADIUS Dell  
3737 Registry of RMOM MIB Custom Login Banners  
4086 Randomness Requirements Dell  
4113 UDP MIB Dynamic ARP Inspection  
4251 SSHv2 Protocol Dell  
4252 SSHv2 Tiered Authentication  
Authentication Dell  
4253 SSHv2 Transport RSPAN  
4254 SSHv2 Connection Dell  
Protocol OpenFlow 1.3  
Dell Python Scripting  
Dell Support Assist  
4419 SSHv2 Transport Layer Protocol HiveManager NG  
4521 LDAP Extensions

### Regulatory, environment and other compliance

#### Safety and emissions

Australia/New Zealand: ACMA RCM Class A  
Canada: ICES Class A; cUL  
China: CCC Class A; NAL  
Europe: CE Class A  
Japan: VCCI Class A  
USA: FCC Class A; NRTL UL; FDA 21 CFR 1040.10 and 1040.11  
Eurasia Customs Union: EAC  
Germany: GS mark  
Product meets EMC and safety standards in many countries inclusive of USA, Canada, EU, Japan, China. For more country-specific regulatory information and approvals, please see your Dell representative.

#### RoHS

Product meets RoHS compliance standards in many countries inclusive of USA, EU, China, and India. For more country-specific RoHS compliance information, please see your Dell EMC representative.

#### EU WEEE

EU Battery Directive  
REACH

#### Energy

Japan: JEL  
Certifications (available or coming soon)  
Available with US Trade Agreements Act (TAA) compliance.  
N-Series products have the necessary features to support a PCI-compliant network topology.

## IT Lifecycle Services for Networking

### Experts, insights and ease

Our highly trained experts, with innovative tools and proven processes, help you transform your IT investments into strategic advantages.



#### Plan & Design

Let us analyze your multivendor environment and deliver a comprehensive report and action plan to build upon the existing network and improve performance.



#### Deploy & Integrate

Get new wired or wireless network technology installed and configured with ProDeploy. Reduce costs, save time, and get up and running fast.



#### Educate

Ensure your staff builds the right skills for long-term success. Get certified on Dell EMC Networking technology and learn how to increase performance and optimize infrastructure.



#### Manage & Support

Gain access to technical experts and quickly resolve multivendor networking challenges with ProSupport. Spend less time resolving network issues and more time innovating.



#### Optimize

Maximize performance for dynamic IT environments with Dell EMC Optimize. Benefit from in-depth predictive analysis, remote monitoring and a dedicated systems analyst for your network.



#### Retire

We can help you resell or retire excess hardware while meeting local regulatory guidelines and acting in an environmentally responsible way.

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